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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/814,344	03/21/2001	Naiqian Lu	16869C016900	3677

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EXAMINER

PARSONS, CHARLES E

ART UNIT	PAPER NUMBER
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2613

DATE MAILED: 07/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/814,344

Applicant(s)

LU, NAIQIAN

Examiner

Charles E Parsons

Art Unit

2613

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 6-14, 17-20, 23 and 25 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-14, 17-20, 23 and 25 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 4/23/2004 have been fully considered but they are not persuasive. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

In response to applicants arguments that the Sun reference does not teach loading subsets of first and second portions of a search window into a memory, the Examiner points out the Rodriguez was relied on for the loading of the memory because Sun does not elaborate on the configuration of his system, and the Examiner was making an attempt to show that it was well known at the time the invention was made, that memory must be divided into portions in order perform matching block searches. First, it has been well established that in order to perform block searching, search areas must be placed in different portions of memory so that the ALU can compare the values of each picture in its search for a matching block. Therefore, memory is inherent to image processing. The reason the Examiner relied on Rodriguez as the secondary reference was to show that the memory on a DSP can be apportioned for such a task as it can with any processor with on chip memory.

In response to the Applicants argument that Rodriguez et al teach a comparison rather than a searching technique, the Examiner disagrees. A careful reading of column 6 lines 4-7 clearly shows that the comparison technique is used for searching for matching blocks.

2. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of

Art Unit: 2613

ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, a person of ordinary skill in the art would have been well aware of the advantages of doing image processing on a DSP and creating enough memory space to include as much memory on chip as possible.

Therefore the Examiner stands behind his original rejection noting that the amendments simply included limitations that were already rejected in a previous action.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sun in view of Rodriguez PN 6016163.

Claims 1, 11 and 20: A method for video compression by comparing a first frame of video

information against a second frame of video information, comprising:

identifying a reference frame contained in said first frame; (See Sun figure 2 note that the previous frame is the reference frame.)

storing said second frame in a first memory; (In order to compare frames storage is inherent.)

defining a search area in said second frame, said search area comprising data points in said second frame, said search area including plural search points; (See Sun figures 12 and 13)

Art Unit: 2613

comparing said reference block to search points contained in said second memory;
determining a first level search point based at least on said step of comparing; (See Sun column 2 lines 41-58)
defining a refined search area centered about said first level search point, See Sun figure 4.)
said refined search area being contained in said search area; and (See sun figure 4)
performing a local search on said refined search area. (See Sun figure 4 note the smaller search areas are centered around the points with minimum SAD.)
storing at least a portion of said search area into a second memory, including one or more of said search points. (While it is well understood in the art that video processing is memory intensive, Sun is silent as to how his apparatus is configured. However, at the time the invention was made, it was well known to those of ordinary skill in the art that block searching was not only memory intensive but also a task well suited for digital signal processors as taught by Rodriguez. See Rodriguez column 5 38-49. Furthermore, Rodriguez teaches that portions of the search windows can be stored and searched within the on board memory as required by the claims. Therefore, it would have been obvious to one of ordinary skill in the art, to provide the necessary memory so as to have available the data needed to perform a proper search, motivated by the knowledge gleaned from Rodriguez that DSP's provide a fast and efficient means for performing block matching tasks.)

Claim 2, 23: The method of claim 1 wherein said determining further includes performing a comparison of said reference block with at least one search point that is stored in a memory that is external to said DSP. (See Rodriguez figure 2)

Art Unit: 2613

Claim 3, 12: The method of claim 1 wherein said local search includes providing a second search window centered about said first level search point, said second search window defining a refined search area contained within said search area of said current frame. (See Sun figure 4)

Claim 4, 13: The method of claim 3 wherein said loading a second frame portion is performed if said refined search area includes data points not contained in said first frame portion. (See figure 4 of Sun, it appears as though the second search area contains points not included in the first search area.

Claim 5, 22: The method of claim 1 wherein the first, second, and third memory portions are portions of an on-chip memory of said DSP. (See figure 2 of Rodriguez, note that the memory is divided into multiple memory portions.)

Claim 6: The method of claim 1 wherein said third memory portion is contained within said second memory portion. (See figure 2 of Rodriguez, note that the memory is divided into multiple memory portions.)

Claim 7: The method of claim 1 wherein said performing comparisons includes producing motion vectors. (See Sun figure 4 the result of the search is the production of a motion vector.)

Claim 8, 17, 25: The method of claim 7 wherein said first level search point is determined based on said motion vectors. (See sun figure 4)

Claim 9, 18: The method of claim 1 wherein said performing comparisons include calculating sum of absolute difference values. (See Sun column 4 lines 62-65)

Claim 10, 19: The method of claim 1 wherein the entirety of said search area is loaded into said second memory portion. (See Rodriguez column 6 lines 4-7)

Art Unit: 2613

Claim 14: The method of claim 11 further including an additional step of comparing said reference block to search points which are contained in said first memory and which are not contained in said second memory, said determining further based on said additional step of comparing. (See Sun figure 4)

Claim 15: The method of claim 11 wherein said steps are performed in a digital signal processor. See column 5 lines 22-25 of Rodriguez.)

Claim 16, 21, 24. The method of claim 15 wherein said first memory is external to said digital signal processor and said second memory is an on-chip memory contained in said digital signal processor. (See Rodriguez figure 2)

Conclusion

2. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles E Parsons whose telephone number is 703-305-3862. The examiner can normally be reached on M-TH 7AM to 5 PM.

Art Unit: 2613

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chris Kelley can be reached on 703-305-4856. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CEP


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